

WEST Search History

DATE: Tuesday, June 19, 2007

<u>Hide?</u>	<u>Set</u>	<u>Name</u>	<u>Query</u>	<u>Hit Count</u>
<i>DB=PGPB,USPT,USOC,EPAB,JPAB,DWPI,TDBD; PLUR=NO; OP=OR</i>				
<input type="checkbox"/>	L33	L27 and l30		1
<input type="checkbox"/>	L32	(l23 or l24 or L25) and l20		1
<input type="checkbox"/>	L31	(l23 or l24 or L25) and l13		1
<input type="checkbox"/>	L30	(l23 or l24 or L25) and l12		27
<input type="checkbox"/>	L29	(l23 or l24 or L25) and l10		1
<input type="checkbox"/>	L28	(l23 or l24 or L25) and l7		1
<input type="checkbox"/>	L27	(l23 or l24 or L25) and l6		10
<input type="checkbox"/>	L26	(l23 or l24 or L25) and l1		1
<input type="checkbox"/>	L25	707/103r-103z.ccls.		2005
<input type="checkbox"/>	L24	707/100.ccls.		5389
<input type="checkbox"/>	L23	707/2-7.ccls.		14837
<input type="checkbox"/>	L22	l20 and L21		1
<input type="checkbox"/>	L21	((rank\$ or relevanc\$ or rat\$) same categor\$ same map\$ same (object or objects))		72
<input type="checkbox"/>	L20	l17 and L19		8
<input type="checkbox"/>	L19	(graph same (object or objects) same category)		164
<input type="checkbox"/>	L18	l1 and L17		1
<input type="checkbox"/>	L17	(sort\$ same (object or objects) same (search\$ or quer\$ or question\$ or request\$ or inquir\$ or enquir\$))		3644
<input type="checkbox"/>	L16	l13 and l14 (path with graph with (node or node) with (edge or edges) same (graph adj1 travers\$) with (proximity or distance or radius or size) with (relevan\$ or rank\$ or rat\$))		1
<input type="checkbox"/>	L15	(path same graph same (node or node) same (edge or edges) same (graph adj1 travers\$) same (proximity or distance or radius or size) same (relevan\$ or rank\$ or rat\$))		0
<input type="checkbox"/>	L14	(delet\$ or end\$ or cancel\$ or terminat\$) near (graph adj1 travers\$)		1
<input type="checkbox"/>	L13	(graph adj1 traversal)		6
<input type="checkbox"/>	L12	(graph adj1 traversal)		368
<input type="checkbox"/>	L11	l6 and l10		1
<input type="checkbox"/>	L10	((object or objects) with (search\$ or inquir\$ or enquir\$ or quer\$ or request\$ or question\$) with graph with categor\$)		3
<input type="checkbox"/>	L9	l6 and l7		1

101-190, L42

<input type="checkbox"/>	L8	l2 and L7	0
<input type="checkbox"/>	L7	(path\$ with graph with (node or node\$) with (rank\$ or relevanc\$ or rat\$))	18
<input type="checkbox"/>	L6	(category near graph)	51
<input type="checkbox"/>	L5	(graph same (quer\$ or search\$ or inquir\$ or enquir\$ or request\$ or question\$) same rank\$ near categor\$)	1
<input checked="" type="checkbox"/>	L4	(graph near (quer\$ or search\$ or inquir\$ or enquir\$ or request\$ or question\$) near rank\$ near categor\$)	0
<input type="checkbox"/>	L3	l1 and L2	0
<input type="checkbox"/>	L2	(graph adj1 algorithm)	186
<input type="checkbox"/>	L1	(Dijkstra adj1 graph)	1

END OF SEARCH HISTORY

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Set	Items	Description
S1	101	GRAPH (W) TRAVERSAL
S2	14	S1 AND EDGE?
S3	7	S2 AND (QUER? OR SEARCH? OR REQUEST?)
S4	4	S3 AND (SORT? OR RELAVANC? OR RAT? OR RANK?)

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Dialog eLink: [USPTO Full Text Retrieval Options](#)

4/9/1

DIALOG(R)File 8: Ei Compendex(R)
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08280670 E.I. No: EIP99054670477

Title: Competitive algorithms for layered graph traversal

Author: Fiat, Amos; Foster, Dean P.; Karloff, Howard; Rabani, Yuval; Ravid, Yiftach ; Vishwanathan, Sundar

Corporate Source: Tel-Aviv Univ, Tel-Aviv, Isr

Source: SIAM Journal on Computing v 28 n 2 Jul-Aug 1998. p 447-462

Publication Year: 1998

CODEN: SMJCAT **ISSN:** 0097-5397

Language: English

Document Type: JA; (Journal Article) **Treatment:** T; (Theoretical)

Journal Announcement: 9907W1

Abstract: A layered graph is a connected graph whose vertices are partitioned into sets $L//0$ equals left brace s right brace , $L//1$, $L//2$, ..., and whose edges, which have nonnegative integral weights, run between consecutive layers. Its width is $\max \{L//i\}$. In the on-line layered graph traversal problem, a searcher starts at s in a layered graph of unknown width and tries to reach a target vertex t; however, the vertices in layer i and the edges between layers $i-1$ and i are only revealed when the searcher reaches layer $i-1$. We give upper and lower bounds on the competitive ratio of layered graph traversal algorithms. We give a deterministic on-line algorithm which is $O(9^{**}w)$ -competitive on width-w graphs and prove that for no w can a deterministic on-line algorithm have a competitive ratio better than $2^{**}w^{**} - 2$ on width-w graphs. We prove that for all w, $w/2$ is a lower bound on the competitive ratio of any randomized on-line layered graph traversal algorithm. For traversing layered graphs consisting of w disjoint paths tied together at a common source, we give a randomized on-line algorithm with a competitive ratio of $O(\log w)$ and prove that this is optimal up to a constant factor. (Author abstract) 22 Refs.

Descriptors: *Graph theory; Computational complexity; Algorithms; Theorem proving; Random processes

Identifiers: Layered graph traversal algorithms; Competitive analysis

Classification Codes:

921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory); 721.1 (Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory); 922.1 (Probability Theory)

921 (Applied Mathematics); 721 (Computer Circuits & Logic Elements); 922 (Statistical Methods)

92 (ENGINEERING MATHEMATICS); 72 (COMPUTERS & DATA PROCESSING)

10/14/90, 1e+2

[open url](#)**Dialog eLink:**

4/9/2

DIALOG(R)File 8: Ei Compendex(R)

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06812846 E.I. No: EIP94031229379

Title: PCBN: A high-performance partitionable circular bus network for distributed systems**Author:** Woo, Tai-Kuo; Su, Stanley Y.W.**Corporate Source:** Univ of Florida, Gainesville, FL, USA**Source:** IEEE Transactions on Parallel and Distributed Systems v 4 n 12 Dec 1993. p 1298-1307**Publication Year:** 1993**CODEN:** ITDSEO **ISSN:** 1045-9219**Language:** English**Document Type:** JA; (Journal Article) **Treatment:** T; (Theoretical)**Journal Announcement:** 9404W4

Abstract: In a distributed computing environment, a high-performance communication network is essential. In this paper, we present a dynamically partitionable circular bus network (PCBN) and efficient algorithms for maximizing its utilization. In our approach, a distributed network is transformed into a graph, in which a vertex represents a communication request and an edge denotes the conflict between a pair of communication requests. A graph traversal algorithm is then applied to the graph to identify some maximal independent sets of vertices. The communication requests corresponding to the vertices of a maximal independent set can proceed in parallel. By computing the expected size of the maximal independent sets of a graph, we can obtain the improvement ratio of the network. In this paper, the network control and synchronization techniques of PBN are described in detail. Another problem dealt with in this paper is the idling problem in the execution of nonconflicting requests. Since the requests may take different amounts of time to execute, the subnetworks of shorter durations will be idle after the completion of their requests if subnetworks are assigned to process them to their completion. This bus idling problem is solved by using a coin-changing algorithm. The performance evaluation shows a significant decrease in network delay. (Author abstract) 13 Refs.

Descriptors: *Distributed computer systems; Algorithms; Computer networks; Graph theory; Storage allocation (computer); Performance; Synchronization; Telecommunication control; Data communication systems

Identifiers: Partitionable circular bus network; Graph transversal algorithm; Coin changing algorithm; Graph coloring algorithms; Resource allocation algorithms; Bus idling problem

Classification Codes:

722.4 (Digital Computers & Systems); 723.1 (Computer Programming); 921.1 (Algebra); 722.3 (Data Communication, Equipment & Techniques); 921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory)

722 (Computer Hardware); 723 (Computer Software); 921 (Applied Mathematics)

72 (COMPUTERS & DATA PROCESSING); 92 (ENGINEERING MATHEMATICS)

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DIALOG(R)File 8: Ei Compendex(R)

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06626827 E.I. No: EIP93030723787

Title: Performance modeling of a partitionable circular bus network for distributed systems

Author: Woo, Tai-Kuo

Corporate Source: Univ of Florida, Gainesville, FL, USA

Conference Title: Proceedings of the 1992 ACM/SIGAPP Symposium on Applied Computing SAC '92

Conference Location: Kansas City, KS, USA **Conference Date:** 19920301

E.I. Conference No.: 17957

Source: Applied Computing: Technological Challenges of the 1990's Proc 92 ACM SIGAPP Symp Appl Comput SAC 92 1992. Publ by ACM, New York, NY, USA. p 758-766

Publication Year: 1992

ISBN: 0-89791-502-x

Language: English

Document Type: CA; (Conference Article) **Treatment:** T; (Theoretical); A; (Applications)

Journal Announcement: 9306W4

Abstract: In a distributed computing environment, a high performance communication network is essential. In this paper, we present a dynamically partitionable circular bus network (PCBN) and an efficient algorithm for maximizing its utilization. In our approach, a distributed network is transformed into a graph, in which a vertex represents a communication request and an edge denotes the conflict between a pair of communication requests. A graph traversal algorithm is then applied to the graph to identify some maximal independent sets of vertices. The communication requests corresponding to the vertices of a maximal independent set can proceed in parallel. By computing the expected size of the maximal independent sets of a graph, we can obtain the improvement ratio of the network. The analytical performance evaluation shows a significant decrease in network delay. (Author abstract) 9 Refs.

Descriptors: *Distributed computer systems; Parallel processing systems; Computer systems; Computer networks; Performance; Algorithms; Graph theory; Combinatorial mathematics; Optimization; Computer hardware

Identifiers: Communication network; Partitionable circular bus network; Graph traversal algorithm

Classification Codes:

722.4 (Digital Computers & Systems); 721.1 (Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory); 921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory); 921.5 (Optimization Techniques)

722 (Computer Hardware); 721 (Computer Circuits & Logic Elements); 921 (Applied Mathematics)

72 (COMPUTERS & DATA PROCESSING); 92 (ENGINEERING MATHEMATICS)

Dialog eLink:

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4/9/4

DIALOG(R)File 8: Ei Compendex(R)

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06513967 **E.I. Monthly No:** EIM9211-057845

Title: Competitive algorithms for layered graph traversal.

Author: Fiat, Amos; Foster, Dean P.; Karloff, Howard; Rabani, Yuval; Ravid, Yiftach ; Viswanathan, Sundar

Corporate Source: Comput Sci Dept, Tel-Aviv Univ, Israel

Conference Title: Proceedings of the 32nd Annual Symposium on Foundations of Computer Science

Conference Location: San Juan, PR, USA **Conference Date:** 19911001

Sponsor: IEEE Computer Soc

E.I. Conference No.: 17012

Source: Annual Symposium on Foundations of Computer Science (Proceedings). Publ by IEEE, Computer Society, Silver Spring, MD, USA (IEEE cat n 91CH3062-7). p 288-297

Publication Year: 1991

CODEN: ASFPDV **ISSN:** 0272-5428 **ISBN:** 0-8186-2445-0

Language: English

Document Type: PA; (Conference Paper) **Treatment:** T; (Theoretical)

Journal Announcement: 9211

Abstract: A layered graph is a connected, weighted graph whose vertices are partitioned into sets $L//0$ equals $s[$, $L//1$, $L//2$, ..., and whose edges run between consecutive layers. Its width is max vertical bar $L//i$ vertical bar [. In the online layered graph traversal problem, a searcher starts at s in a layered graph of unknown width and tries to reach a target vertex t ; however, the vertices in layer i and the edges between layers $i - 1$ and i are only revealed when the searcher reaches layer $i-1$. The authors give upper and lower bounds on the competitive ratio of layered graph traversal algorithms. They give a deterministic online algorithm that is $O(9w)$ -competitive on width- w graphs and prove that for no w can a deterministic online algorithm have a competitive ratio better than $2w^{**-**}2$ on width- w graphs. They prove that for all w , $w/2$ is a lower bound on the competitive ratio of any randomized online layered graph traversal algorithm. For traversing layered graphs consisting of w disjoint paths tied together at a common source, they give a randomized online algorithm with a competitive ratio of $O(\log w)$ and prove that this is optimal up to a constant factor. 19 Refs.

Descriptors: *MATHEMATICAL TECHNIQUES--*Graph Theory; COMPUTER PROGRAMMING-Algorithms; PROBABILITY--Random Processes

Identifiers: GRAPH TRAVERSAL; LAYERED GRAPHS; ONLINE ALGORITHMS; RANDOMIZED ALGORITHMS

Classification Codes:

921 (Applied Mathematics); 723 (Computer Software); 922 (Statistical Methods)

92 (ENGINEERING MATHEMATICS); 72 (COMPUTERS & DATA PROCESSING)

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Set	Items	Description
S1	101	GRAPH (W) TRAVERSAL
S2	14	S1 AND EDGE?
S3	7	S2 AND (QUER? OR SEARCH? OR REQUEST?)
S4	4	S3 AND (SORT? OR RELAVANC? OR RAT? OR RANK?)
S5	0	DIJKASTRA (W) GRAPH
S6	185	GRAPH (W) ALGORITHM
S7	49	S6 AND (EDGE? OR NODE? OR NODE?)
S8	8	S7 AND (SEARCH? OR QUER? OR INQUIR? OR ENQUIR? OR REQUEST? OR QUESTION?)
S9	0	S8 AND TRAVERSAL (W) GRAPH
S10	1	TRAVERSAL (W) GRAPH

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DIALOG(R)File 8: Ei Compendex(R)

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11168257 E.I. No: EIP06321004961

Title: Finding people frequently appearing in news

Author: Ozkan, Derya; Duygulu, Pinar

Corporate Source: Bilkent University Department of Computer Engineering, 06800, Ankara, Turkey

Conference Title: 5th International Conference on Image and Video Retrieval, CIVR 2006

Conference Location: Tempe, AZ, United States Conference Date: 20060713-20060715

E.I. Conference No.: 67930

Source: Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics) Image and Video Retrieval - 5th International Conference, CIVR 2006, Proceedings v 4071 LNCS 2006.

Publication Year: 2006

ISSN: 0302-9743 eISSN: 1611-3349

Language: English

Document Type: CA; (Conference Article) Treatment: T; (Theoretical)

Journal Announcement: 0608W2

Abstract: We propose a graph based method to improve the performance of person queries in large news video collections. The method benefits from the multi-modal structure of videos and integrates text and face information. Using the idea that a person appears more frequently when his/her name is mentioned, we first use the speech transcript text to limit our search space for a query name. Then, we construct a similarity graph with nodes corresponding to all of the faces in the search space, and the edges corresponding to similarity of the faces. With the assumption that the images of the query name will be more similar to each other than to other images, the problem is then transformed into finding the densest component in the graph corresponding to the images of the query name. The same graph algorithm is applied for detecting and removing the faces of the anchorpeople in an unsupervised way. The experiments are conducted on 229 news videos provided by NIST for TRECVID 2004. The results show that proposed method outperforms the text only based methods and provides cues for recognition of faces on the large scale. copy Springer-Verlag Berlin Heidelberg 2006. 16 Refs.

Descriptors: *Multimedia systems; Graph theory; Speech recognition; Image analysis; Face

recognition; Algorithms

Identifiers: News videos; Face information; Speech transcript text; Graph algorithm

Classification Codes:

723.5 (Computer Applications); 921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory); 751.5 (Speech); 723.2 (Data Processing)

723 (Computer Software, Data Handling & Applications); 921 (Applied Mathematics); 751 (Acoustics, Noise & Sound); 716 (Electronic Equipment, Radar, Radio & Television)

72 (COMPUTERS & DATA PROCESSING); 92 (ENGINEERING MATHEMATICS); 75 (SOUND & ACOUSTICAL TECHNOLOGY); 71 (ELECTRONICS & COMMUNICATION ENGINEERING)

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DIALOG(R)File 8: Ei Compendex(R)

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10412940 E.I. No: EIP05219115104

Title: From distributed memory cycle detection to parallel LTL model checking

Author: Barnat, J.; Brim, L.; Chaloupka, J.

Corporate Source: Faculty of Informatics Masaryk University, Brno, Czech Republic

Conference Title: Proceedings of the Ninth International Workshop on Formal Methods for Industrial Critical Systems (FMICS 2004)

Conference Date: 20030625-20030627

E.I. Conference No.: 64683

Source: Electronic Notes in Theoretical Computer Science v 133 May 31 2005. p 21-39

Publication Year: 2005

ISSN: 1571-0661

Language: English

Document Type: CA; (Conference Article) **Treatment:** T; (Theoretical); X; (Experimental)

Journal Announcement: 0506W1

Abstract: In left bracket 2 right bracket we proposed a parallel graph algorithm for detecting cycles in very large directed graphs distributed over a network of workstations. The algorithm employs back-level edges as computed by the breadth first search. In this paper we describe how to turn the algorithm into an explicit state distributed memory LTL model checker by extending it with detection of accepting cycles, counterexample generation and partial order reduction. We discuss these extensions and show experimental results. copy 2005 Elsevier B.V. All rights reserved. 19 Refs.

Descriptors: *Distributed computer systems; Parallel algorithms; Storage allocation (computer); Automation; Computer science; Formal logic; Software engineering

Identifiers: LTL model checking; Breadth first search; Distributed memory; Parallel graph algorithms

Classification Codes:

722.4 (Digital Computers & Systems); 722.1 (Data Storage, Equipment & Techniques); 721.1 (Computer Theory (Includes Formal Logic, Automata Theory, Switching Theory & Programming Theory)); 723.1 (Computer Programming)

722 (Computer Hardware); 723 (Computer Software, Data Handling & Applications); 731 (Automatic Control Principles & Applications); 721 (Computer Circuits & Logic Elements)

72 (COMPUTERS & DATA PROCESSING); 73 (CONTROL ENGINEERING)

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DIALOG(R)File 8: Ei Compendex(R)
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10242999 E.I. No: EIP05058813959

Title: An efficient distributed algorithm for ear decomposition

Author: Tsin, Yung H.

Corporate Source: School of Computer Science University of Windsor, Windsor, Ont. N9B 3P4, Canada

Conference Title: Proceedings of the International Conference on Modeling, Simulation and Visualization Methods, MSV'04 and Proceedings of the Int. Conference on Algorithmic Mathematics and Comput. Sci., AMCS'04

Conference Location: Las Vegas, NV, United States **Conference Date:** 20040621-20040624

Sponsor: Computer Science research, Education, and Appl. Press (CSREA); International Technology Institute (ITI); Korean Society for Internet Information (KSII); World Academy of Science for Information Technology (WAS)

E.I. Conference No.: 64217

Source: Proceedings of the International Conference on Modeling, Simulation and Visualization Methods, MSV'04 and Proceedings of the Int. Conference on Algorithmic Mathematics and Comput. Sci., AMCS'04 Proceedings of the International Conference on Modeling, Simulation and Visualization Methods, MSV'04 and Proceddings of the Int. Conference on Algorithmic Mathematics and Comput. Sci., AMCS'04 2004.

Publication Year: 2004

ISBN: 1932415343

Language: English

Document Type: CA; (Conference Article) **Treatment:** T; (Theoretical)

Journal Announcement: 0502W2

Abstract: an ear decomposition of a connected undirected graph is a partition of the link set of the graph into a collection of link-disjoint paths satisfying certain properties. In a recent paper of Kazmierczak and Radhakrishnan left bracket IEEE Transactions on Parallel and Distributed Systems 11 (1), 2000, 110-118. right bracket , a distributed algorithm for ear-decomposition is presented. While the authors claimed that the algorithm has $O(m)$ time and message complexity (m is the number of links in the graph), it is shown in this paper that the actual time and message complexity of their algorithm are $O(mn)$ (n is the number of nodes in the graph). An efficient distributed algorithm for ear decomposition is then presented. The algorithm requires only $2n-2$ time units and $4m-n+1$ messages. It also uses only two types of messages and runs on a weaker distributed computer model. 9 Refs.

Descriptors: *Algorithms; Graph theory; Telecommunication networks; Telecommunication links; Program processors; Trees (mathematics); Computational complexity; Mathematical models

Identifiers: Ear decomposition; Distributed algorithm; Graph algorithm; Depth-first search algorithm

Classification Codes:

921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory); 723.1 (Computer Programming); 721.1 (Computer Theory (Includes Formal Logic, Automata Theory, Switching Theory & Programming Theory))

921 (Applied Mathematics); 716 (Electronic Equipment, Radar, Radio & Television); 723 (Computer Software, Data Handling & Applications); 721 (Computer Circuits & Logic Elements)

92 (ENGINEERING MATHEMATICS); 71 (ELECTRONICS & COMMUNICATION ENGINEERING); 72 (COMPUTERS & DATA PROCESSING)

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DIALOG(R)File 8: Ei Compendex(R)
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09452752 E.I. No: EIP03297550455

Title: Distributed visualization of graph algorithms**Author:** Sherstov, Alexander A.**Corporate Source:** Computer Science Department Hope College, Holland, MI 49423, United States**Conference Title:** Proceedings of the 34th SIGCSE Technical Symposium on Computer Science Education**Conference Location:** Reno,NV, United States **Conference Date:** 20030219-20030222**Sponsor:** The Association for Computing Machinery Special Interest; on Computer Science Education**E.I. Conference No.:** 61152**Source:** SIGCSE Bulletin (Association for Computing Machinery, Special Interest Group on Computer Science Education) 2003. p 376-380**Publication Year:** 2003**CODEN:** SIGSD3 **ISSN:** 0097-8418**Language:** English**Document Type:** CA; (Conference Article) **Treatment:** G; (General Review)**Journal Announcement:** 0307W4

Abstract: DisViz is a visualization tool designed to assist students in learning graph algorithms, an important topic in the undergraduate curriculum. DisViz is intended for collaborative use by a group of students over a classroom network. This visualization system views network hosts as graph nodes and the socket connections among them, as graph edges. In typical usage, every student runs a copy of DisViz on his/her local machine. These applications detect each other's presence on the network and coordinate their actions to execute the graph algorithm in question and to deliver identical animations to every terminal. 10 Refs.

Descriptors: *Computer aided instruction; Interactive computer graphics; Algorithms; Visualization; Computer aided software engineering; Students; Animation; Distributed computer systems; Computer supported cooperative work; Computer simulation; Computer science; Engineering education; Local area networks

Identifiers: Graph algorithms; Distributed visualization; Graph nodes**Classification Codes:**

901.2 (Education); 723.5 (Computer Applications); 723.1 (Computer Programming); 722.4 (Digital Computers & Systems); 721.1 (Computer Theory (Includes Formal Logic, Automata Theory, Switching Theory & Programming Theory))

901 (Engineering Profession); 723 (Computer Software, Data Handling & Applications); 722 (Computer Hardware); 721 (Computer Circuits & Logic Elements)

90 (ENGINEERING, GENERAL); 72 (COMPUTERS & DATA PROCESSING)

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Dialog eLink:

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DIALOG(R)File 8: Ei Compendex(R)
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08121613 E.I. No: EIP98094384982

Title: Distributed graph algorithm for the detection of local cycles and knots

Author: Boukerche, Azzedine; Tropper, Carl

Corporate Source: Univ of North Texas, Denton, TX, USA

Source: IEEE Transactions on Parallel and Distributed Systems v 9 n 8 Aug 1998. p 748-757

Publication Year: 1998

CODEN: ITDSEO **ISSN:** 1045-9219

Language: English

Document Type: JA; (Journal Article) **Treatment:** A; (Applications); T; (Theoretical)

Journal Announcement: 9811W3

Abstract: In this paper, a distributed cycle/knot detection algorithm for general graphs is presented. The algorithm distinguishes between cycles and knots and is the first algorithm to our knowledge which does so. It is especially relevant to an application such as parallel simulation in which 1) cycles and knots can arise frequently, 2) the size of the graph is very large, and 3) it is necessary to know if a given node is in a cycle or a knot. It requires less communication than previous algorithms - 2 m vs. (at least) (4m) for the Chandy and Misra algorithm, where m is the number of links in the graph. It requires O (nlog (n)) bits of memory, where n is the number of nodes. The algorithm differs from the classical diffusing computation methods through its use of incomplete search messages to speed up the computation. We introduce a marking scheme in order to identify strongly connected subcomponents of the graph which cannot reach the initiator of the algorithm. This allows us to distinguish between the case in which the initiator is in a cycle (only) or is in a knot. (Author abstract) 23 Refs.

Descriptors: *Distributed computer systems; Algorithms; Computer simulation; Telecommunication links; Communication channels (information theory); Computational methods; Data communication systems

Identifiers: Distributed graph algorithms; Distributed cycle/knot detection algorithms; Distributed simulations; Distributed deadlock detections

Classification Codes:

722.4 (Digital Computers & Systems); 723.5 (Computer Applications); 716.1 (Information & Communication Theory)

722 (Computer Hardware); 723 (Computer Software); 716 (Radar, Radio & TV Electronic Equipment); 921 (Applied Mathematics)

72 (COMPUTERS & DATA PROCESSING); 71 (ELECTRONICS & COMMUNICATIONS); 92 (ENGINEERING MATHEMATICS)

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DIALOG(R)File 8: Ei Compendex(R)

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07782096 **E.I. No:** EIP97083783915

Title: Dynamic trees as search trees via Euler tours, applied to the network simplex algorithm

Author: Tarjan, Robert E.

Corporate Source: Princeton Univ, Princeton, NJ, USA

Source: Mathematical Programming, Series B v 78 n 2 Aug 1 1997. p 169-177

Publication Year: 1997

CODEN: MPSBEU **ISSN:** 0025-5610

Language: English

Document Type: JA; (Journal Article) **Treatment:** T; (Theoretical)

Journal Announcement: 9710W1

Abstract: The dynamic tree is an abstract data type that allows the maintenance of a collection of trees

subject to joining by adding edges (linking) and splitting by deleting edges (cutting), while at the same time allowing reporting of certain combinations of vertex or edge values. For many applications of dynamic trees, values must be combined along paths. For other applications, values must be combined over entire trees. For the latter situation, an idea used originally in parallel graph algorithms, to represent trees by Euler tours, leads to a simple implementation with a time of $O(\log n)$ per tree operation, where n is the number of tree vertices. We apply this representation to the implementation of two versions of the network simplex algorithm, resulting in a time of $O(\log n)$ per pivot, where n is the number of vertices in the problem network. (Author abstract) 26 Refs.

Descriptors: *Dynamic programming; Trees (mathematics); Parallel algorithms

Identifiers: Dynamic trees; Euler tours; Network simplex algorithm; Parallel graph algorithm

Classification Codes:

921.5 (Optimization Techniques); 921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory)

921 (Applied Mathematics); 723 (Computer Software)

92 (ENGINEERING MATHEMATICS); 72 (COMPUTERS & DATA PROCESSING)

Dialog eLink: [USPTO Full Text Retrieval Options](#)

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DIALOG(R)File 8: Ei Compendex(R)

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07695173 E.I. No: EIP97053657216

Title: Word graph algorithm for large vocabulary continuous speech recognition

Author: Ortmanns, Stefan; Ney, Hermann; Aubert, Xavier

Corporate Source: Univ of Technology, Aachen, Ger

Source: Computer Speech & Language v 11 n 1 Jan 1997. p 43-72

Publication Year: 1997

CODEN: CSPLEO **ISSN:** 0885-2308

Language: English

Document Type: JA; (Journal Article) **Treatment:** A; (Applications); T; (Theoretical)

Journal Announcement: 9707W2

Abstract: This paper describes a method for the construction of a word graph (or lattice) for large vocabulary, continuous speech recognition. The advantage of a word graph is that a fairly good degree of decoupling between acoustic recognition at the 10-ms level and the final search at the word level using a complicated language model can be achieved. The word graph algorithm is obtained as an extension of the one-pass beam search strategy using word dependent copies of the word models or lexical trees. The method has been tested successfully on the 20 000-word NAB'94 task (American English, continuous speech, 20 000 words, speaker independent) and compared with the integrated method. The experiments show that the word graph density can be reduced to an average number of about 10 word hypotheses, i.e. word edges in the graph, per spoken word with virtually no loss in recognition performance. (Author abstract) Refs.

Descriptors: *Speech recognition; Pattern recognition systems; Speech analysis; Algorithmic languages; Trees (mathematics)

Identifiers: Word graph; Lexical trees

Classification Codes:

723.1.1 (Computer Programming Languages)

751.5 (Speech); 723.5 (Computer Applications); 751.1 (Acoustic Waves); 723.1 (Computer Programming); 921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory)

751 (Acoustics); 723 (Computer Software); 716 (Radar, Radio & TV Electronic Equipment); 921 (Applied Mathematics)
 75 (ACOUSTICAL TECHNOLOGY); 72 (COMPUTERS & DATA PROCESSING); 71 (ELECTRONICS & COMMUNICATIONS); 92 (ENGINEERING MATHEMATICS)

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8/9/8

DIALOG(R)File 8: Ei Compendex(R)
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07360540 E.I. No: EIP96033102867

Title: Separator based sparsification. I. Planarity testing and minimum spanning trees

Author: Eppstein, David; Galil, Zvi; Italiano, Giuseppe F.; Spencer, Thomas H.

Corporate Source: Univ of California, Irvine, CA, USA

Source: Journal of Computer and System Sciences v 52 n 1 Feb 1996. p 3-27

Publication Year: 1996

CODEN: JCSSBM **ISSN:** 0022-0000

Language: English

Document Type: JA; (Journal Article) **Treatment:** T; (Theoretical)

Journal Announcement: 9605W2

Abstract: We describe algorithms and data structures for maintaining a dynamic planar graph subject to edge insertions and edge deletions that preserve planarity but that can change the embedding. We give a fully dynamic planarity testing algorithm that maintains a graph subject to edge insertions and deletions and that allows queries that test whether the graph is currently planar, or whether a potential new edge would violate planarity, in $O(n^{**} \text{ one half})$ amortized time per update or query. We give fully dynamic algorithms for maintaining the connected components, the best swap and the minimum spanning forest of a planar graph in $O(\log n)$ worst-case time per insertion and $O(\log^{**} n)$ per deletion. Finally, we give fully dynamic algorithms for maintaining the 2-edge-connected components of a planar graph in $O(\log n)$ amortized time per insertion and $O(\log^{**} n)$ per deletion. All of the data structures, except for the one that answers planarity queries, handle only insertions that keep the graph planar. All our algorithms improve previous bounds. The improvements are based upon a new type of sparsification combined with several properties of separators in planar graphs. (Author abstract) 18 Refs.

Descriptors: *Data structures; Algorithms; Graph theory; Query languages; Computation theory

Identifiers: Sparsification; Planarity testing; Minimum spanning trees; Dynamic graph algorithm; Edge insertions; Edge deletions

Classification Codes:

723.1.1 (Computer Programming Languages)

723.2 (Data Processing); 921.4 (Combinatorial Mathematics, Includes Graph Theory, Set Theory);

723.1 (Computer Programming); 721.1 (Computer Theory, Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory)

723 (Computer Software); 921 (Applied Mathematics); 721 (Computer Circuits & Logic Elements)

72 (COMPUTERS & DATA PROCESSING); 92 (ENGINEERING MATHEMATICS)

? t s10/full/1

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10/9/1

DIALOG(R)File 8: Ei Compendex(R)
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06372874 E.I. Monthly No: EI9202021657

Title: On the time to traverse all edges of a graph.

Author: Zuckerman, David

Corporate Source: Univ of California, Berkeley, CA, USA

Source: Information Processing Letters v 38 n 6 Jun 28 1991 p 335-337

Publication Year: 1991

CODEN: IFPLAT ISSN: 0020-0190

Language: English

Document Type: JA; (Journal Article) Treatment: T; (Theoretical)

Journal Announcement: 9202

Abstract: The expected time for a random walk on an undirected graph $G=(V, E)$ to visit all the vertices is $O(\sqrt{|V| \cdot |E|})$, and is $O(\sqrt{|V| \cdot |E|^2})$ for regular graphs. Here we show that both bounds hold even if we are required to traverse all the edges, although our bounds for regular graphs requires that the degree be $\delta > \sqrt{|V| \cdot \delta}$ for some δ less than 1. (Author abstract) 8 Refs.

Descriptors: *MATHEMATICAL TECHNIQUES--*Graph Theory; MATHEMATICAL TECHNIQUES-- Combinatorial Mathematics; PROBABILITY--Random Processes

Identifiers: GRAPH TRAVERSAL; GRAPH ALGORITHMS; RANDOM WALK; COVER TIME

Classification Codes:

921 (Applied Mathematics); 922 (Statistical Methods)

92 (ENGINEERING MATHEMATICS)

? ds

Set	Items	Description
S1	0	DIKASTRA GRAPH
S2	0	DIJKASTRA (W) GRAPH
S3	283	GRAPH (W) ALGORITHM
S4	84	S3 AND (OBJECT? OR NODE? OR EDGE?)
S5	14	S4 AND (QUER? OR SEARCH? OR REQUEST?)
S6	0	S5 AND TRAVERSAL?
S7	0	S5 AND (RANK? OR RAT? OR RELEVANC?)

? t s5/medium/1-14

Dialog eLink: **USPTO Full Text Retrieval Options**

5/3/1

DIALOG(R)File 2: INSPEC

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10246040

Title: Design pattern detection using similarity scoring

Author Tsantalis, N.; Chatzigeorgiou, A.; Stephanides, G.; Halkidis, S.T.

Author Affiliation: Dept. of Appl. Informatics, Univ. of Macedonia, Thessaloniki, Greece

Journal: IEEE Transactions on Software Engineering vol.32, no.11 p. 896-909

Publisher: IEEE ,

Publication Date: Nov. 2006 **Country of Publication:** USA

CODEN: IESEDJ **ISSN:** 0098-5589

SICI: 0098-5589(200611)32:11L.896:DPDU;1-J

Material Identity Number: I271-2007-001

U.S. Copyright Clearance Center Code: 0098-5589/2006/\$20.00

Language: English

Subfile: C

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Dialog eLink: **USPTO Full Text Retrieval Options**

5/3/2

DIALOG(R)File 2: INSPEC

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10215061

Title: Compression-based fixed-parameter algorithms for feedback vertex set and edge bipartization

Author Jiong Guo; Gramm, J.; Huffner, F.; Niedermeier, R.; Wernicke, S.

Author Affiliation: Inst. fur Informatik, Friedrich-Schiller-Univ. Jena, Germany

Journal: Journal of Computer and System Sciences vol.72, no.8 p. 1386-96

Publisher: Academic Press ,

Publication Date: Dec. 2006 **Country of Publication:** USA

CODEN: JCSSBM **ISSN:** 0022-0000

SICI: 0022-0000(200612)72:8L.1386:CBFP;1-3

Material Identity Number: J066-2006-007

Language: English

Subfile: C

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5/3/3

DIALOG(R)File 2: INSPEC

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10122157

Title: Minimum energy path planning for ad hoc networks

Author Chen, D.; Lin, P.J.

Author Affiliation: Massachusetts Inst. of Technol., Cambridge, MA, USA

Conference Title: 2006 IEEE Wireless Communications and Networking Conference (IEEE Cat. No. 06TH8876) p. 288-93

Publisher: IEEE , Piscataway, NJ, USA

Publication Date: 2006 **Country of Publication:** USA CD-ROM pp.

ISBN: 1 4244 0269 7 **Material Identity Number:** XX-2006-01309

U.S. Copyright Clearance Center Code: 1 4244 0269 7/2006/\$20.00

Conference Title: 2006 IEEE Wireless Communications and Networking Conference

Conference Date: 3-6 April 2006 **Conference Location:** Las Vegas, NV, USA

Language: English

Subfile: B

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5/3/4

DIALOG(R)File 2: INSPEC

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10027099

Title: Finding people frequently appearing in news

Author Ozkan, D.; Duygulu, P.

Author Affiliation: Dept. of Comput. Eng., Bilkent Univ., Ankara, Turkey

Conference Title: Image and Video Retrieval. 5th International Conference, CIVR 2006. Proceedings (Lecture Notes in Computer Science Vol.4071) p. 173-82

Editor(s): Sundaram, H.; Naphade, M.; Smith, J.R.

Publisher: Springer-Verlag , Berlin, Germany

Publication Date: 2006 **Country of Publication:** Germany xii+547 pp.

ISBN: 3 540 36018 2 **Material Identity Number:** XX-2006-00953

Conference Title: Image and Video Retrieval. 5th International Conference, CIVR 2006. Proceedings

Conference Date: 13-15 July 2006 **Conference Location:** Tempe, AZ, USA

Language: English

Subfile: C

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Dialog eLink: [USPTO Full Text Retrieval Options](#)

5/3/5

DIALOG(R)File 2: INSPEC

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09736491

Title: Efficient optimal surface detection: theory, implementation, and experimental validation

Author Kang Li; Xiaodong Wu; Chen, D.Z.; Sonka, M.

Author Affiliation: Dept. of Electr. & Comput. Eng., Iowa Univ., Iowa City, IA, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference

Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.5370, no.1 p. 620-7

Publisher: SPIE-Int. Soc. Opt. Eng ,

Publication Date: 2004 **Country of Publication:** USA

CODEN: PSISDG **ISSN:** 0277-786X

SICI: 0277-786X(2004)5370:1L.620:EOSD;1-8

Material Identity Number: C574-2005-048

U.S. Copyright Clearance Center Code: 0277-786X/04/\$15.00

Conference Title: Medical Imaging 2004. Image Processing

Conference Date: 16-19 Feb. 2004 **Conference Location:** San Diego, CA, USA

Language: English

Subfile: A B C

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Dialog eLink:

5/3/6

DIALOG(R)File 2: INSPEC

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09719286

Title: The bottleneck k-MST

Author Punnen, A.P.; Chapovska, O.

Author Affiliation: Dept. of Math., Simon Fraser Univ., Surrey, BC, Canada

Journal: Information Processing Letters vol.95, no.5 p. 512-17

Publisher: Elsevier ,

Publication Date: 15 Sept. 2005 **Country of Publication:** Netherlands

CODEN: IFPLAT **ISSN:** 0020-0190

SICI: 0020-0190(20050915)95:5L.512:B;1-3

Material Identity Number: I206-2005-014

Language: English

Subfile: C

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USPTO Full Text Retrieval Options

Dialog eLink:

5/3/7

DIALOG(R)File 2: INSPEC

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09692711

Title: Identify the centerline of tubular structure in medical images

Author Yu-Tai Ching; Yeh, C.

Author Affiliation: Dept. of Comput. & Inf. Sci., Nat. Chiao Tung Univ., HsunChu, Taiwan

Journal: Proceedings of the SPIE - The International Society for Optical Engineering **Conference**
Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.5747, no.1 p. 2002-11
Publisher: SPIE-Int. Soc. Opt. Eng ,
Publication Date: 2005 **Country of Publication:** USA
CODEN: PSISDG **ISSN:** 0277-786X
SICI: 0277-786X(2005)5747:1L.2002:ICTS;1-K
Material Identity Number: C574-2005-214
U.S. Copyright Clearance Center Code: 0277-786X/2005/\$15.00
Conference Title: Medical Imaging 2005: Image Processing
Conference Date: 17 Feb. 2005 **Conference Location:** San Diego, CA, USA
Language: English
Subfile: A B
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Dialog eLink: [USPTO Full Text Retrieval Options](#)

5/3/8
DIALOG(R)File 2: INSPEC
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09448429 **INSPEC Abstract Number:** C2005-07-1160-142
Title: Automated generation of search tree algorithms for hard graph modification problems
Author Gramm, J.; Guo, J.; Huffner, F.; Niedermeier, R.
Author Affiliation: Wilhelm-Schickard-Inst. fur Inf., Tübingen Univ., Germany
Journal: Algorithmica vol.39, no.4 p. 321-47
Publisher: Springer-Verlag ,
Publication Date: Aug. 2004 **Country of Publication:** USA
CODEN: ALGOEJ **ISSN:** 0178-4617
SICI: 0178-4617(200408)39:4L.321:AGST;1-R
Material Identity Number: E327-2004-008
Language: English
Subfile: C
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Dialog eLink: [USPTO Full Text Retrieval Options](#)

5/3/9
DIALOG(R)File 2: INSPEC
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09374750 **INSPEC Abstract Number:** C2005-06-6180N-001
Title: An approach to automatic generation of multi-lingual synonymous terms dictionary using Japanese-English bilingual author's keywords
Author Aizawa, A.
Author Affiliation: Res. Center for Inf. Resources, National Inst. of Informatics, Tokyo, Japan
Journal: Journal of Information Processing and Management vol.47, no.6 p. 401-9
Publisher: Japan Science and Technology Corp ,
Publication Date: Sept. 2004 **Country of Publication:** Japan
CODEN: JOKAAB **ISSN:** 0021-7298
SICI: 0021-7298(200409)47:6L.401:AAGM;1-V

Material Identity Number: G321-2004-011

Language: Japanese

Subfile: C

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5/3/10

DIALOG(R)File 2: INSPEC

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08946319 **INSPEC Abstract Number:** B2004-06-6135-081, C2004-06-1250M-032

Title: A new median graph algorithm

Author Hlaoui, A.; Wang, S.

Author Affiliation: DMI, Sherbrooke Univ., Que., Canada

Conference Title: Graph Based Representations in Pattern Recognition. 4th IAPR International Workshop, GbRPR 2003. Proceedings (Lecture Notes in Comput. Sci. Vol.2726) p. 225-34

Editor(s): Hancock, E.; Vento, M.

Publisher: Springer-Verlag , Berlin, Germany

Publication Date: 2003 **Country of Publication:** Germany viii+270 pp.

Material Identity Number: XX-2003-02283

Conference Title: Graph Based Representations in Pattern Recognition. 4th IAPR International Workshop, GbRPR 2003. Proceedings

Conference Date: 30 June-2 July 2003 **Conference Location:** York, UK

Language: English

Subfile: B C

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Dialog eLink:



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5/3/11

DIALOG(R)File 2: INSPEC

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08584102 **INSPEC Abstract Number:** B2003-05-7990-020

Title: Stochastic search and graph techniques for MCM path planning

Author Piatko, C.D.; Diehl, C.P.; McNamee, P.; Resch, C.L.; I-Jeng Wang

Author Affiliation: Appl. Phys. Lab., Johns Hopkins Univ., Laurel, MD, USA

Journal: Proceedings of the SPIE - The International Society for Optical Engineering Conference

Title: Proc. SPIE - Int. Soc. Opt. Eng. (USA) vol.4742 p. 583-93

Publisher: SPIE-Int. Soc. Opt. Eng ,

Publication Date: 2002 **Country of Publication:** USA

CODEN: PSISDG **ISSN:** 0277-786X

SICI: 0277-786X(2002)4742L.583:SSGT;1-H

Material Identity Number: C574-2002-318

U.S. Copyright Clearance Center Code: 0277-786X/02/\$15.00

Conference Title: Detection and Remediation Technologies for Mines and Minelike Targets VII

Conference Sponsor: SPIE

Conference Date: 1-5 April 2002 **Conference Location:** Orlando, FL, USA

Language: English

Subfile: B

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Dialog eLink: [USPTO Full Text Retrieval Options](#)

5/3/12

DIALOG(R)File 2: INSPEC

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07024829 **INSPEC Abstract Number:** C9810-4240P-049

Title: A distributed graph algorithm for the detection of local cycles and knots

Author: Boukerche, A.; Tropper, C.

Author Affiliation: Dept. of Comput. Sci., North Texas Univ., Denton, TX, USA

Journal: IEEE Transactions on Parallel and Distributed Systems vol.9, no.8 p. 748-57

Publisher: IEEE ,

Publication Date: Aug. 1998 **Country of Publication:** USA

CODEN: ITDSEO **ISSN:** 1045-9219

SICI: 1045-9219(199808)9:8L.748:DGAD;1-5

Material Identity Number: N785-98009

U.S. Copyright Clearance Center Code: 1045-9219/98/\$10.00

Language: English

Subfile: C

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5/3/13

DIALOG(R)File 2: INSPEC

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06562979 **INSPEC Abstract Number:** B9706-6130-006, C9706-1250C-005

Title: A word graph algorithm for large vocabulary continuous speech recognition

Author: Ortmanns, S.; Ney, H.; Aubert, X.

Author Affiliation: Lehrstuhl fur Inf., Tech. Hochschule Aachen, Germany

Journal: Computer Speech and Language vol.11, no.1 p. 43-72

Publisher: Academic Press ,

Publication Date: Jan. 1997 **Country of Publication:** UK

CODEN: CSPLEO **ISSN:** 0885-2308

SICI: 0885-2308(199701)11:1L.43:WGAL;1-R

Material Identity Number: J928-97001

U.S. Copyright Clearance Center Code: 0885-2308/97/010043+30\$25.00

Language: English

Subfile: B C

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5/3/14

DIALOG(R)File 2: INSPEC

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04918500 INSPEC Abstract Number: C91044417

Title: AND/OR graph heuristic search algorithm NAO* based on norm S

Author: Wang Shitong

Author Affiliation: Zhenjiang Shipbuilding Inst., China

Journal: Chinese Journal of Computers vol.14, no.1 p. 14-22

Publication Date: 1991 **Country of Publication:** China

CODEN: JIXUDT **ISSN:** 0254-4164

Language: Chinese

Subfile: C

? ds

Set	Items	Description
S1	159	GRAPH (W) TRAVERSAL
S2	1	S1 AND (ELIMINAT? OR END? OR DELET? OR CANCEL?) (W) GRAPH
S3	0	DIJKASTRA GRAPH
S4	0	DIJKASTRA (W) GRAPH
S5	283	GRAPH (W) ALGORITHM
S6	0	S2 AND S5
S7	0	GRAPH (W) EDGE? (W) NODE?
S8	283	GRAPH (W) EDGE?
S9	41	S8 AND (QUER? OR SEARCH? OR REQUEST?)
S10	6	S9 AND (RANK? OR RELEVANC? OR RAT?)
S11	0	S10 AND TRAVERS?

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Dialog eLink: USPTO Full Text Retrieval Options

2/9/1

DIALOG(R)File 2: INSPEC

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09798148

Title: Identifying critical components during information security evaluations

Author Rae, A.; Fidge, C.

Author Affiliation: Irivensys Rail Syst. Australia, Brisbane Technol. Park, Qld., Australia

Journal: Journal of Research and Practice on Information Technology vol.37, no.4 p. 311-22

Publisher: Australian Comput. Soc ,

Publication Date: 2005 **Country of Publication:** Australia

CODEN: JRPTFH **ISSN:** 1443-458X

SICI: 1443-458X(2005)37:4L.311:ICCD;1-K

Material Identity Number: K606-2005-004

Language: English **Document Type:** Journal Paper (JP)

Treatment: Practical (P)

Abstract: Electronic communications devices intended for government or military applications must be rigorously evaluated to ensure that they maintain data confidentiality. High-grade information security evaluations require a detailed analysis of the device's design, to determine how it achieves necessary security functions. In practice, such evaluations are labour-intensive and costly, so there is a strong incentive to find ways to make the process more efficient. In this paper, we show how well-known concepts from graph theory can be applied to a device's design to optimise information security evaluations. In particular, we use end-to-end graph traversals to eliminate components that do not need to be evaluated at all, and minimal cutsets to identify the smallest group of components that needs to be evaluated in depth. (10 Refs)

Subfile: B C

Descriptors: data communication equipment; graph theory; security of data

Identifiers: critical component identification; information security evaluation; electronic communication devices; data confidentiality; graph theory; device design; end-to-end graph traversal

Class Codes: B6210 (Telecommunication applications); B0250 (Combinatorial mathematics) ; C5690 (Other data communication equipment and techniques); C6130S (Data security); C1160 (Combinatorial mathematics)

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10/9/1

DIALOG(R)File 2: INSPEC

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09995552

Title: Parallel query processing and edge ranking of graphs

Author: Dereniowski, D.; Kubale, M.

Author Affiliation: Dept. of Algorithms & Syst. Modeling, Gdansk Univ. of Technol., Poland

Conference Title: Parallel Processing and Applied Mathematics. 6th International Conference, PPAM 2005. Revised Selected Papers (Lecture Notes in Computer Science Vol.3911) p. 463-9

Editor(s): Wyrzykowski, R.; Dongarra, J.; Meyer, N.; Wasniewski, J.

Publisher: Springer-Verlag, Berlin, Germany

Publication Date: 2006 **Country of Publication:** Germany xxiii+1126 pp.

ISBN: 3 540 34141 2 **Material Identity Number:** XX-2006-00679

Conference Title: Parallel Processing and Applied Mathematics. 6th International Conference, PPAM 2005. Revised Selected Papers

Conference Date: 11-14 Sept. 2005 **Conference Location:** Poznan, Poland

Language: English **Document Type:** Conference Paper (PA)

Treatment: Theoretical (T); Experimental (X)

Abstract: In this paper we deal with the problem of finding an optimal query execution plan in database systems. We improve the analysis of a polynomial-time approximation algorithm due to Makino et al. for designing query execution plans with almost optimal number of parallel steps. This algorithm is based on the concept of edge ranking of graphs. We use a new upper bound for the edge ranking number of a tree to derive a better approximation ratio for this algorithm. We also present some experimental results obtained during the tests of the algorithm on random graphs in order to compare the quality of both approximation ratios on average. Both theoretical analysis and experimental results indicate the superiority of our approach. (13 Refs)

Subfile: C

Descriptors: parallel databases; query processing; tree data structures; trees (mathematics)

Identifiers: parallel query processing; graph edge ranking; optimal query execution plan ; database systems; polynomial-time approximation algorithm

Class Codes: C6160B (Distributed databases); C1160 (Combinatorial mathematics); C6150N (Distributed systems software); C6120 (File organisation)

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10/9/2

DIALOG(R)File 2: INSPEC

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08840031 **INSPEC Abstract Number:** C2004-02-6110B-087

Title: Software architecture recovery based on pattern matching

Author: Sartipi, K.

Author Affiliation: Sch. of Comput. Sci., Waterloo Univ., Ont., Canada

Conference Title: Proceedings International Conference on Software Maintenance ICSM 2003 p. 293-6

Publisher: IEEE Comput. Soc , Los Alamitos, CA, USA

Publication Date: 2003 **Country of Publication:** USA xvi+468 pp.

ISBN: 0 7695 1905 9 Material Identity Number: XX-2003-03153

U.S. Copyright Clearance Center Code: 1063 6773/2003/\$17.00

Conference Title: International Conference on Software Maintenance

Conference Sponsor: IEEE Comput. Soc. Tech. Council on Software Eng.(TCSE); Software Improvement Group; Raincode; Microsoft; City of Amsterdam

Conference Date: 22-26 Sept. 2003 **Conference Location:** Amsterdam, Netherlands

Language: English **Document Type:** Conference Paper (PA)

Treatment: Practical (P)

Abstract: This paper is a summary of the author's thesis that presents a model and an environment for recovering the high level design of legacy software systems based on user defined architectural patterns and graph matching techniques. In the proposed model, a high-level view of a software system in terms of the system components and their interactions is represented as a query, using a description language. A query is mapped onto a pattern-graph, where a component and its interactions with other components are represented as a group of graph-nodes and a group of graph-edges, respectively. Interaction constraints can be modeled by the description language as a part of the query. Such a pattern-graph is applied against an entity-relation graph that represents the information extracted from the source code of the software system. An approximate graph matching process performs a series of graph transformation operations (i.e., node/edge insertion/deletion) on the pattern-graph and uses a ranking mechanism based on data mining association to obtain a sub-optimal solution. The obtained solution corresponds to an extracted architecture that complies with the given query. (7 Refs)

Subfile: C

Descriptors: graph theory; pattern matching; reverse engineering; software architecture; systems re-engineering

Identifiers: software architecture recovery; pattern matching; legacy software systems; architectural patterns; graph matching; interaction constraints; description language; entity-relation graph; source code; graph transformation operations; ranking mechanism; data mining association

Class Codes: C6110B (Software engineering techniques); C1250 (Pattern recognition); C1160 (Combinatorial mathematics)

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10/9/3

DIALOG(R)File 2: INSPEC

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08614878 **INSPEC Abstract Number:** B2003-06-6250-045, C2003-06-1160-075

Title: Radiocolorings in periodic planar graphs: PSPACE-completeness and efficient approximations for the optimal range of frequencies

Author: Fotakis, D.A.; Nikoletseas, S.E.; Papadopoulou, V.G.; Spirakis, P.G.

Author Affiliation: Max-Planck-Inst. fur Inf., Saarbrucken, Germany

Conference Title: Graph-Theoretic Concepts in Computer Science: 28th International Workshop, WG 2002. Revised Papers (Lecture Notes in Computer Science Vol.2573) p. 223-34

Editor(s): Kucera, L.

Publisher: Springer-Verlag , Berlin, Germany

Publication Date: 2002 **Country of Publication:** Germany xi+422 pp.

ISBN: 3 540 00331 2 **Material Identity Number:** XX-2003-00176

Conference Title: Graph-Theoretic Concepts in Computer Science. 28th International Workshop, WG 2002. Revised Papers

Conference Date: 13-15 June 2002 **Conference Location:** Cesky Krumlov, Czech Republic

Language: English **Document Type:** Conference Paper (PA)

Treatment: Practical (P); Theoretical (T)

Abstract: The frequency assignment problem (FAP) in radio networks is the problem of assigning frequencies to transmitters exploiting frequency reuse while keeping signal interference to acceptable levels. The FAP is usually modelled by variations of the graph coloring problem. The radiocoloring (RC) of a graph $G(V,E)$ is an assignment function $\Phi : V \rightarrow \mathbb{N}$ such that ; $\Phi(u) - \Phi(v) >= 2$, when u, v are neighbors in G , and ; $\Phi(u) - \Phi(v) >= 1$ when the distance of u, v in G is two. The range of frequencies used is called span. Here, we consider the optimization version of the radiocoloring problem (RCP) of finding a radiocoloring assignment of minimum span, called min span RCP. We deal with a variation of RCP: that of satisfying frequency assignment requests with some periodic behavior. In this case, the interference graph is an (infinite) periodic graph. Infinite periodic graphs model finite networks that accept periodic (in time, e.g. daily) requests for frequency assignment. Alternatively, they may model very large networks produced by the repetition of a small graph. A periodic graph G is defined by an infinite two-way sequence of repetitions of the same finite graph $G_{\text{sub } i}/(V_{\text{sub } i}, E_{\text{sub } i})$. The edge set of G is derived by connecting the vertices of each iteration $G_{\text{sub } i}/$ to some of the vertices of the next iteration $G_{\text{sub } i+1}/$, the same for all $G_{\text{sub } i}/$. The model of periodic graphs considered here is similar to that of periodic graphs in Orlin [1981], Marathe et al [1998]. We focus on planar periodic graphs, because in many cases real networks are planar and also because of their independent mathematical interest. We give two basic results: We prove that the min span RCP is PSPACE-complete for periodic planar graphs. We provide an $O(n(\Delta(G_{\text{sub } i}) + \sigma))$ time algorithm, (where $|V_{\text{sub } i}| = n$, $\Delta(G_{\text{sub } i})$ is the maximum degree of the graph $G_{\text{sub } i}/$ and σ is the number of edges connecting each $G_{\text{sub } i}/$ to $G_{\text{sub } i+1}/$), which obtains a radiocoloring of a periodic planar graph G that approximates the minimum span within a ratio which tends to 2 as $\Delta(G_{\text{sub } i}) + \sigma$ tends to infinity. (17 Refs)

Subfile: B C

Descriptors: algorithm theory; computational complexity; frequency allocation; graph colouring; interference (signal); radio networks

Identifiers: radiocoloring; RC; periodic planar graph; PSPACE-completeness; optimal frequency range; frequency assignment problem; FAP; radio network; frequency reuse; acceptable signal interference; graph coloring problem; assignment function; span; radiocoloring problem; RCP optimization version; min span RCP; RCP periodic behavior; interference graph; infinite periodic graph; finite network; periodic request; infinite two-way repetition sequence graph; graph edge set; vertices connection

Class Codes: B6250 (Radio links and equipment); B5230 (Electromagnetic compatibility and interference); B0250 (Combinatorial mathematics); C1160 (Combinatorial mathematics); C4240 (Programming and algorithm theory)

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DIALOG(R)File 2: INSPEC

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08350487 **INSPEC Abstract Number:** C2002-09-1160-069

Title: Approximation algorithms for the bottleneck stretch factor problem

Author Narasimhan, G.; Smid, M.

Author Affiliation: Sch. of Comput. Sci., Florida Int. Univ., Miami, FL, USA

Journal: Nordic Journal of Computing vol.9, no.1 p. 13-31

Publisher: Publishing Assoc. Nordic Journal of Comput ,

Publication Date: Spring 2002 **Country of Publication:** Finland

CODEN: NJCOFR **ISSN:** 1236-6064
SICI: 1236-6064(200221)9:1L.13:AABS;1-V
Material Identity Number: D077-2002-002

Language: English **Document Type:** Journal Paper (JP)

Treatment: Theoretical (T)

Abstract: The stretch factor of a Euclidean graph is the maximum ratio of the distance in the graph between any two points and their Euclidean distance. The following problem is considered. Pre-process a set S of n points in R^d into a data structure that supports the following queries: given an arbitrary query value $b > 0$, compute a constant-factor approximation of the stretch factor of the graph $G_{\leq b}$, which is the graph on S containing all edges of length at most b. We give a data structure for this problem having size $O(\log n)$ and query time $O(\log \log n)$. Even though there could be up to $\binom{n}{2}$ different stretch factors in the collection $\{G_{\leq b} : b > 0\}$ of graphs, we show that this data structure can be constructed in subquadratic time. Our algorithms use techniques from computational geometry, such as minimum spanning trees, well-separated pairs, data structures for the nearest-neighbor problem, and algorithms for selecting and ranking distances. (18 Refs)

Subfile: C

Descriptors: approximation theory; computational complexity; computational geometry; data structures; graph theory; query processing; trees (mathematics)

Identifiers: approximation algorithms; bottleneck stretch factor problem; Euclidean graph; maximum distance ratio; Euclidean distance; point-set preprocessing; data structure; query value; constant-factor approximation; graph edge lengths; query time; subquadratic time complexity; computational geometry; minimum spanning trees; well-separated pairs; nearest-neighbor problem; distance selection algorithm; distance ranking algorithm; geometric spanners

Class Codes: C1160 (Combinatorial mathematics); C4240C (Computational complexity); C4260 (Computational geometry); C6120 (File organisation); C4250 (Database theory)

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10/9/5

DIALOG(R)File 2: INSPEC

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07275483 **INSPEC Abstract Number:** C1999-07-7250R-033

Title: Proximity search in databases

Author Goldman, R.; Shivakumar, N.; Venkatasubramanian, S.; Garcia-Molina, H.

Author Affiliation: Stanford Univ., CA, USA

Conference Title: Proceedings of the Twenty-Fourth International Conference on Very-Large Databases p. 26-37

Editor(s): Gupta,A.; Shmueli,O.; Widom,J.

Publisher: Morgan Kaufmann Publishers Inc , San Francisco, CA, USA

Publication Date: 1998 **Country of Publication:** USA xvii+708 pp.

ISBN: 1 55860 566 5 **Material Identity Number:** XX-1998-02232

Conference Title: Proceedings of 24th Annual International Conference on Very Large Data Bases (VLDB'98)

Conference Sponsor: Oracle; AT&T Lab.; IBM; Informix; Microsoft

Conference Date: 24-27 Aug. 1998 **Conference Location:** New York, NY, USA

Language: English **Document Type:** Conference Paper (PA)

Treatment: Practical (P)

Abstract: An information retrieval (IR) engine can rank documents based on the textual proximity of

keywords within each document. In this paper, we apply this notion to search across an entire database for objects that are "near" other relevant objects. Proximity searching enables simple "focusing" queries based on general relationships among objects, which is helpful for interactive query sessions. We view the database as a graph, with data in vertices (objects) and relationships indicated by edges. Proximity is defined based on shortest paths between objects. We have implemented a prototype search engine that uses this model to enable keyword searches over databases, and we have found it very effective for quickly finding relevant information. Computing the distance between objects in a graph stored on a disk can be very expensive. Hence, we show how to build compact indexes that allow us to quickly find the distance between objects at search time. Experiments show that our algorithms are efficient and scale well. (24 Refs)

Subfile: C

Descriptors: data structures; database indexing; graph theory; information retrieval; search engines; very large databases

Identifiers: proximity searching; databases; information retrieval engine; document ranking; keyword textual proximity; focusing queries; interactive query sessions; graph vertices; relationships; graph edges; shortest paths; prototype search engine; keyword searches; relevant information; compact indexes; efficient scalable algorithms

Class Codes: C7250R (Information retrieval techniques); C6120 (File organisation); C7250N (Search engines)

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10/9/6

DIALOG(R)File 2: INSPEC

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05974191 **INSPEC Abstract Number:** C9507-6160S-023

Title: Spatial knowledge representation and retrieval in 3-D image databases

Author Gudivada, V.N.; Jung, G.S.

Author Affiliation: Dept. of Comput. Sci., Ohio Univ., Athens, OH, USA

p. 90-7

Publisher: IEEE Comput. Soc. Press , Los Alamitos, CA, USA

Publication Date: 1995 **Country of Publication:** USA xv+347 pp.

ISBN: 0 8186 7105 X

U.S. Copyright Clearance Center Code: 0 8186 7105 X/95/\$4.00

Conference Title: Proceedings of the International Conference on Multimedia Computing and Systems

Conference Sponsor: IEEE Comput. Soc. Tech. Committee on Multimedia Comput

Conference Date: 15-18 May 1995 **Conference Location:** Washington, DC, USA

Language: English **Document Type:** Conference Paper (PA)

Treatment: Theoretical (T)

Abstract: In multimedia retrieval applications such as architectural design, interior design, and real estate marketing, there exists a generic class of user queries that require retrieving images in the database that are spatially similar to the user query. We propose an image representation scheme (referred to as 3D spatial orientation graph or simply SOG) and an algorithm (referred to as SIM/sub 3D/) for retrieving 3D images of relevance (based on spatial similarity) to user queries from large image collections. Spatial similarity between a query and a database image is quantified based on the number as well as the extent to which the edges of SOG of the database image conform to the corresponding edges in the SOG of the query image. The time complexity of SIM/sub 3D/ is Theta (mod E/sub q/ mod + mod E/sub d/ mod) where mod E/sub q/ mod and mod E/sub d/ mod are the number of edges in the query and database images. SIM/sub 3D/ is robust in the sense that it can recognize translation and scale

variants of apt image and these properties are shown formally. The effectiveness of SIM/sub 3D/ is evaluated using a testbed image collection. The testbed comprises 60 images and are produced by generating 3 variants of each of the 15 original images. Image variants are produced by translation and scale transformations, and an arbitrary composition of these two transformations. The variants are designed to examine the robustness of the proposed algorithm. The results produced by the algorithm on a set of test queries are in agreement with the intuitively expected results. (11 Refs)

Subfile: C

Descriptors: computational complexity; graph theory; image representation; knowledge representation; multimedia computing; query processing; very large databases; visual databases

Identifiers: 3D image databases; spatial knowledge representation; spatial retrieval; multimedia retrieval applications; architectural design; interior design; real estate marketing; user queries; image retrieval; image representation scheme; algorithm; large image collections; spatial similarity; 3D spatial orientation graph; graph edges; time complexity; translation; scale variants; testbed image collection; image variants; scale transformations; robustness

Class Codes: C6160S (Spatial and pictorial databases); C6130M (Multimedia); C6170K (Knowledge engineering techniques); C5260B (Computer vision and image processing techniques); C4240C (Computational complexity); C1160 (Combinatorial mathematics)

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- 6. [**Object recognition from large libraries of line patterns**](#)
by Huet, Benoit, D.Phil., The University of York (United Kingdom), 1999, 167 pages; AAT C822731
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- 7. [**Modelling and retrieving multimedia data using spatial and temporal information**](#)
by Nabil, Mohammad, Ph.D., University of New South Wales (Australia), 1998; AAT 0599430
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- 8. [**Bayesian reasoning for CSG-based object recognition**](#)
by Chang, Jyh-Chian, Ph.D., Northwestern University, 1995, 188 pages; AAT 9537408
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- 9. [**Dataflow query processing and optimization**](#)
by Goel, Piyush, Ph.D., University of Michigan, 1992, 191 pages; AAT 9226903
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- 10. [**A theory of reference graphs in relational databases**](#)
by Janssens, Hans, Dr., Universitaire Instelling Antwerpen (Belgium), 1991, 295 pages; AAT 9223516
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11. **Representation and manipulation of heterogeneous graph data objects**
by Wang, George Ren-Zheng, Ph.D., University of California, Los Angeles, 1990, 301 pages; AAT 9025

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159 pages; AAT C820307

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1 XSnippet: mining For sample code

Naiyana Sahavechaphan, Kajal Claypool

 October 2006 **ACM SIGPLAN Notices**, Proceedings of the 21st annual ACM SIGPLAN conference on Object-oriented programming systems, languages, and applications OOPSLA '06, Volume 41 Issue 10

Publisher: ACM Press

 Full text available: pdf(487.89 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

It is common practice for software developers to use *examples* to guide development efforts. This largely unwritten, yet standard, practice of "develop by example" is often supported by examples bundled with library or framework packages, provided in textbooks, and made available for download on both official and unofficial web sites. However, the vast number of examples that are embedded in the billions of lines of already developed library and framework code are largely untapped. We have ...

Keywords: code assistants, code mining, code reuse, ranking code samples

2 Fast detection of communication patterns in distributed executions

Thomas Kunz, Michiel F. H. Seuren

 November 1997 **Proceedings of the 1997 conference of the Centre for Advanced Studies on Collaborative research CASCON '97**

Publisher: IBM Press

 Full text available: pdf(4.21 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Understanding distributed applications is a tedious and difficult task. Visualizations based on process-time diagrams are often used to obtain a better understanding of the execution of the application. The visualization tool we use is Poet, an event tracer developed at the University of Waterloo. However, these diagrams are often very complex and do not provide the user with the desired overview of the application. In our experience, such tools display repeated occurrences of non-trivial commun ...

3 Web graphs: Web projections: learning from contextual subgraphs of the web

Jure Leskovec, Susan Dumais, Eric Horvitz

 May 2007 **Proceedings of the 16th international conference on World Wide Web WWW '07**

Publisher: ACM Press

181790, 642

<http://portal.acm.org/results.cfm?coll=ACM&dl=ACM&CFID=21763914&CFTOKEN=268...> 6/19/07

Full text available:  pdf(313.24 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Graphical relationships among Web pages have been exploited in methods for ranking search results. To date, specific graphical properties have been used in these analyses. We introduce a WebProjection methodology that generalizes prior efforts of graphical relationships of the web in several ways. With the approach, we create subgraphs by projecting sets of pages and domains onto the larger web graph, and then use machine learning to construct predictive models that consider graphical properties as ...

Keywords: contextual subgraph, query reformulation, web graph, web projection, web search

4 SALSA: the stochastic approach for link-structure analysis

 R. Lempel, S. Moran

April 2001 **ACM Transactions on Information Systems (TOIS)**, Volume 19 Issue 2

Publisher: ACM Press

Full text available:  pdf(180.81 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Today, when searching for information on the WWW, one usually performs a query through a term-based search engine. These engines return, as the query's result, a list of Web pages whose contents matches the query. For broad-topic queries, such searches often result in a huge set of retrieved documents, many of which are irrelevant to the user. However, much information is contained in the link-structure of the WWW. Information such as which pages are linked to others can be used to augment searc ...

Keywords: Link-structure analysis, SALSA, TKC effect, hubs and authorities, random walks

5 Web ranking and classification: Ranking target objects of navigational queries

 Louisa Raschid, Yao Wu, Woei-Jyh Lee, María Esther Vidal, Panayiotis Tsaparas, Padmini

Srinivasan, Aditya Kumar Sehgal

November 2006 **Proceedings of the eighth ACM international workshop on Web information and data management WIDM '06**

Publisher: ACM Press

Full text available:  pdf(405.64 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Web navigation plays an important role in exploring public interconnected data sources such as life science data. A navigational query in the life science graph produces a result graph which is a layered directed acyclic graph (DAG). Traversing the result paths in this graph reaches a target object set (TOS). The challenge for ranking the target objects is to provide recommendations that reflect the relative importance of the retrieved object, as well as its relevance to the specific query posed ...

Keywords: link analysis, navigational query, pagerank, ranking

6 Query processing of semi-structured data: BLINKS: ranked keyword searches on graphs

 Hao He, Haixun Wang, Jun Yang, Philip S. Yu

June 2007 **Proceedings of the 2007 ACM SIGMOD international conference on Management of data SIGMOD '07**

Publisher: ACM Press

Full text available:  pdf(366.64 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Query processing over graph-structured data is enjoying a growing number of applications. A top- k keyword search query on a graph finds the top k answers according to some ranking criteria, where each answer is a substructure of the graph containing all query keywords. Current techniques for supporting such queries on general graphs suffer from several drawbacks, e.g., poor worst-case performance, not taking full advantage of indexes, and high memory requirements. To address the ...

Keywords: graphs, indexing, keyword search, ranking

7 Association mining

 Aaron Ceglar, John F. Roddick

July 2006 **ACM Computing Surveys (CSUR)**, Volume 38 Issue 2

Publisher: ACM Press

Full text available:  pdf(770.54 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The task of finding correlations between items in a dataset, association mining, has received considerable attention over the last decade. This article presents a survey of association mining fundamentals, detailing the evolution of association mining algorithms from the seminal to the state-of-the-art. This survey focuses on the fundamental principles of association mining, that is, itemset identification, rule generation, and their generic optimizations.

Keywords: Data mining, association mining

8 Ranking: Boolean + ranking: querying a database by k-constrained optimization

 Zhen Zhang, Seung-won Hwang, Kevin Chen-Chuan Chang, Min Wang, Christian A. Lang, Yuan-chi Chang

June 2006 **Proceedings of the 2006 ACM SIGMOD international conference on Management of data SIGMOD '06**

Publisher: ACM Press

Full text available:  pdf(316.14 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

The wide spread of databases for managing structured data, compounded with the expanded reach of the Internet, has brought forward interesting *data retrieval* and *analysis* scenarios to RDBMS. In such settings, queries often take the form of *k-constrained optimization*, with a Boolean constraint and a numeric optimization expression as the goal function, retrieving only the top- k tuples. This paper proposes the concept of supporting such queries, as their nature i ...

Keywords: A* search, constrained optimization, index, query processing, top-k query

9 Special issue on knowledge representation

 Ronald J. Brachman, Brian C. Smith

February 1980 **ACM SIGART Bulletin**, Issue 70

Publisher: ACM Press

Full text available:  pdf(13.13 MB) Additional Information: [full citation](#), [abstract](#), [citations](#)

In the fall of 1978 we decided to produce a special issue of the SIGART Newsletter devoted to a survey of current knowledge representation research. We felt that there were two useful functions such an issue could serve. First, we hoped to elicit a clear picture of how people working in this subdiscipline understand knowledge representation research, to illuminate the issues on which current research is focused, and to catalogue what approaches and techniques are currently being developed. Second ...

10 Index-driven similarity search in metric spaces (Survey Article)

 Gisli R. Hjaltason, Hanan Samet

December 2003 **ACM Transactions on Database Systems (TODS)**, Volume 28 Issue 4

Publisher: ACM Press

Full text available:  pdf(650.64 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

Similarity search is a very important operation in multimedia databases and other database applications involving complex objects, and involves finding objects in a data set S similar to a query object q , based on some similarity measure. In this article, we focus on methods for similarity search that make the general assumption that similarity is represented with a distance metric d . Existing methods for handling similarity search in this setting typically fall into one of ...

Keywords: Hierarchical metric data structures, distance-based indexing, nearest neighbor queries, range queries, ranking, similarity searching

11 Modeling and querying moving objects in networks

Hartmut Güting, Teixeira de Almeida, Zhiming Ding

June 2006 **The VLDB Journal — The International Journal on Very Large Data Bases**,

Volume 15 Issue 2

Publisher: Springer-Verlag New York, Inc.

Full text available:  pdf(610.40 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

Moving objects databases have become an important research issue in recent years. For modeling and querying moving objects, there exists a comprehensive framework of abstract data types to describe objects moving freely in the 2D plane, providing data types such as *moving point* or *moving region*. However, in many applications people or vehicles move along transportation networks. It makes a lot of sense to model the network explicitly and to describe movements relative to the network ...

Keywords: ADT, Data type, Moving object, Network, Spatio-temporal

12 Collision detection and proximity queries

 Sunil Hadap, Dave Eberle, Pascal Volino, Ming C. Lin, Stephane Redon, Christer Ericson

August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**

Publisher: ACM Press

Full text available:  pdf(11.22 MB) Additional Information: [full citation](#), [abstract](#)

This course will primarily cover widely accepted and proved methodologies in collision detection. In addition more advanced or recent topics such as continuous collision detection, ADFs, and using graphics hardware will be introduced. When appropriate the methods discussed will be tied to familiar applications such as rigid body and cloth simulation, and will be compared. The course is a good overview for those developing applications in physically based modeling, VR, haptics, and robotics.

13 On the performance of object clustering techniques

 Manolis M. Tsangaris, Jeffrey F. Naughton

June 1992 **ACM SIGMOD Record , Proceedings of the 1992 ACM SIGMOD international conference on Management of data SIGMOD '92**, Volume 21 Issue 2

Publisher: ACM Press

Full text available:  pdf(1.20 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

We investigate the performance of some of the best-known object clustering algorithms

on four different workloads based upon the tektronix benchmark. For all four workloads, stochastic clustering gave the best performance for a variety of performance metrics. Since stochastic clustering is computationally expensive, it is interesting that for every workload there was at least one cheaper clustering algorithm that matched or almost matched stochastic clustering. Unfortunately, for each workl ...

14 Paper session 5: approximate and ranked query processing: Challenges in selecting

 **paths for navigational queries: trade-off of benefit of path versus cost of plan**

Maria-Ester Vidal, Louisa Raschid, Julian Mestre

June 2004 **Proceedings of the 7th International Workshop on the Web and Databases: colocated with ACM SIGMOD/PODS 2004 WebDB '04**

Publisher: ACM Press

Full text available:  pdf(167.25 KB) Additional Information: [full citation](#), [abstract](#), [references](#)

Life sciences sources are characterized by a complex graph of overlapping sources, and multiple alternate links between sources. A (navigational) query may be answered by traversing multiple alternate paths between a start source and a target source. Each of these paths may have dissimilar benefit, e.g., the cardinality of result objects that are reached in the target source. Paths may also have dissimilar costs of evaluation, i.e., the execution cost of a query evaluation plan for a path. In pr ...

15 Computing graphical queries over XML data

 Sara Comai, Ernesto Damiani, Piero Fraternali

October 2001 **ACM Transactions on Information Systems (TOIS)**, Volume 19 Issue 4

Publisher: ACM Press

Full text available:  pdf(707.80 KB) Additional Information: [full citation](#), [abstract](#), [references](#), [citations](#), [index terms](#)

The rapid evolution of XML from a mere data exchange format to a universal syntax for encoding domain-specific information raises the need for new query languages specifically conceived to address the characteristics of XML. Such languages should be able not only to extract information from XML documents, but also to apply powerful transformation and restructuring operators, based on a well-defined semantics. Moreover, XML queries should be natural to write and understand, as nontechnical person ...

Keywords: Document restructuring, graphical query languages, semantics

16 Relevancy-based access control and its evaluation on versioned XML documents

 Mizuho Iwaihara, Ryotaro Hayashi, Somchai Chatvichienchai, Chutiporn Anutariya, Vilas Wuwongse

February 2007 **ACM Transactions on Information and System Security (TISSEC)**, Volume 10 Issue 1

Publisher: ACM Press

Full text available:  pdf(1.00 MB) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Integration of version and access control of XML documents has the benefit of regulating access to rapidly growing archives of XML documents. Versioned XML documents provide us with valuable information on dependencies between document nodes, but, at the same time, presenting the risk of undesirable data disclosure. In this article, we introduce the notion of relevancy-based access control, which realizes protection of versioned XML documents by various types of relevancy, such as version dep ...

Keywords: Access control, XML, XPath, query language, security, version control

17 Nearest and reverse nearest neighbor queries for moving objects

Rimantas Benetis, S. Jensen, Gytis Karčiauskas, Simona Šaltenis
September 2006 **The VLDB Journal — The International Journal on Very Large Data Bases**, Volume 15 Issue 3
Publisher: Springer-Verlag New York, Inc.
Full text available: [pdf\(790.23 KB\)](#) Additional Information: [full citation](#), [abstract](#), [citations](#)

With the continued proliferation of wireless communications and advances in positioning technologies, algorithms for efficiently answering queries about large populations of moving objects are gaining interest. This paper proposes algorithms for k nearest and reverse k nearest neighbor queries on the current and anticipated future positions of points moving continuously in the plane. The former type of query returns k objects nearest to a query object for each time point dur ...

Keywords: Continuous queries, Incremental update, Location-based services, Mobile objects, Neighbor queries, Persistent queries

18 Performances of clustering policies in object bases

 Adel Shrif
November 1994 **Proceedings of the third international conference on Information and knowledge management CIKM '94**
Publisher: ACM Press
Full text available: [pdf\(967.44 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

In this paper, we address the problem of clustering graphs in object-oriented databases. Unlike previous studies which focused only on a workload consisting of a single operation, this study tackles the problem when the workload is a set of operations (method and queries) that occur with a certain probability. Thus, the goal is to minimize the expected cost of an operation in the workload, while maintaining a similarly low cost for each individual operation class. To this end, we ...

Keywords: graph partitioning, object-oriented database systems, performance analysis, storage techniques

19 What makes the differences: benchmarking XML database implementations

 Hongjun Lu, Jeffrey Xu Yu, Guoren Wang, Shihui Zheng, Haifeng Jiang, Ge Yu, Aoying Zhou
February 2005 **ACM Transactions on Internet Technology (TOIT)**, Volume 5 Issue 1
Publisher: ACM Press
Full text available: [pdf\(589.14 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

XML is emerging as a major standard for representing data on the World Wide Web. Recently, many XML storage models have been proposed to manage XML data. In order to assess an XML database's abilities to deal with XML queries, several benchmarks have also been proposed, including XMark and XMach. However, no reported studies using those benchmarks were found that can provide users with insights on the impacts of a variety of storage models on XML query performance. In this article, we report our ...

Keywords: XML query processing, XML storage model, benchmark

20 Shape-based retrieval and analysis of 3D models

 Thomas Funkhouser, Michael Kazhdan
August 2004 **ACM SIGGRAPH 2004 Course Notes SIGGRAPH '04**
Publisher: ACM Press
Full text available: [pdf\(12.56 MB\)](#) Additional Information: [full citation](#), [abstract](#)

Large repositories of 3D data are rapidly becoming available in several fields, including mechanical CAD, molecular biology, and computer graphics. As the number of 3D models grows, there is an increasing need for computer algorithms to help people find the interesting ones and discover relationships between them. Unfortunately, traditional text-based search techniques are not always effective for 3D models, especially when queries are geometric in nature (e.g., find me objects that fit into thi ...

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0000544483 IP Accession No: 200609-94-117828

Extensions to query languages for graph traversal problems

Mannino, M V

IEEE Transactions on Knowledge and Data Engineering , v 2 , n 3 , p 353-363 , Sept. 1990

Publication Date: 1990

Publisher: Institute of Electrical and Electronics Engineers, Inc. , 445 Hoes Ln , Piscataway , NJ , 08854-1331

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File Segment: Computer & Information Systems Abstracts

Abstract:

Extensions to database query languages for retrievals that involve inferencing on the nodes and edges of a graph are surveyed. Common types of inferencing are to find paths between two nodes, compute a value for a path such as a distance or an elapsed time, and to choose among alternative paths. The survey is based on the data model (relational or functional), method of extension (iteration, recursion, or special operators), interface style (string or tabular), and restrictions (data- and problem-oriented). The Quel, object-oriented functional data, G-Whin, and Alpha languages are examined in detail with different values for these properties. The characteristics of other languages are summarized in several tables. The results of the survey indicate the diversity of language extensions and the need to provide data-model and query-language features to address such problems

Descriptors: Graphs; Query processing; Databases; Strings; Constrictions; Retrieval; Tables; Mathematical models; Operators; Iterative methods; Recursion

Subj Catg: 94, Management of Computing and Information Systems

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0000513862 IP Accession No: 200609-22-043519

PCBN: a high-performance partitionable circular bus network for distributed systems

Woo, Tai-Kuo; Su, S Y W

IEEE Transactions on Parallel and Distributed Systems , v 4 , n 12 , p 1298-1307 , Dec. 1993

Publication Date: 1993**Publisher:** Institute of Electrical and Electronics Engineers, Inc. , 445 Hoes Ln , Piscataway , NJ , 08854-1331**Country Of Publication:** USA**Publisher Url:** <http://ieee.org>**Publisher Email:** inspec@ieee.org**Document Type:** Journal Article**Record Type:** Abstract**Language:** English**ISSN:** 1045-9219**Electronic Issn:** NO**DOI:** [10.1109/71.250112](https://doi.org/10.1109/71.250112)**File Segment:** Computer & Information Systems Abstracts**Abstract:**

The authors present a dynamically partitionable circular bus network (PCBN) and efficient algorithms for maximizing its utilization. In their approach, a distributed network is transformed into a graph, in which a vertex represents a communication request and an edge denotes the conflict between a pair of communication requests. A graph traversal algorithm is applied to the graph to identify some maximal independent sets of vertices. The communication requests corresponding to the vertices of a maximum independent set call proceed in parallel. By computing the expected size of the maximal independent sets of a graph, the improvement ratio of the network can be obtained. The network control and synchronization techniques of PCBN are described in detail. The idling problem in the execution of nonconflicting requests is also discussed

Descriptors: Graphs; Networks; Computer networks; Algorithms; Buses (vehicles); Synchronization; Utilization; Network control; Synchronism; Computation

Subj Catg: 22, Processor Architectures and Process Management**USPTO Full Text Retrieval Options****Dialog eLink:**

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0000309572 IP Accession No: 391983

Competitive algorithms for layered graph traversal

Fiat, Amos; Foster, Dean P; Karloff, Howard; Rabani, Yuval; Ravid, Yiftach; Vishwanathan, Sundar
 Tel-Aviv Univ, Tel-Aviv, Isr
 SIAM J COMPUT , v 28 , n 2 , p 447-462 , July-Aug. 1998

Publication Date: 1998

Publisher: SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS , 3600 University City Science Center , Philadelphia , PA , 19104-2688

Country Of Publication: USA

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Publisher Email: siam@siam.org

Document Type: Journal Article

Record Type: Abstract

Language: English

ISSN: 0097-5397

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Abstract:

A layered graph is a connected graph whose vertices are partitioned into sets $L_{\text{sub}(0)}$ identical with $\{s\}$, $L_{\text{sub}(1)}$, $L_{\text{sub}(2)}$, ..., and whose edges, which have nonnegative integral weights, run between consecutive layers. Its width is $\max\{|L_{\text{sub}(i)}|\}$. In the on-line layered graph traversal problem, a searcher starts at s in a layered graph of unknown width and tries to reach a target vertex t ; however, the vertices in layer i and the edges between layers $i-1$ and i are only revealed when the searcher reaches layer $i-1$. We give upper and lower bounds on the competitive ratio of layered graph traversal algorithms. We give a deterministic on-line algorithm which is $O(9^{\text{super}(w)})$ -competitive on width- w graphs and prove that for no w can a deterministic on-line algorithm have a competitive ratio better than $2^{\text{super}(w-2)}$ on width- w graphs. We prove that for all w , $w/2$ is a lower bound on the competitive ratio of any randomized on-line layered graph traversal algorithm. For traversing layered graphs consisting of w disjoint paths tied together at a common source, we give a randomized on-line algorithm with a competitive ratio of $O(\log w)$ and prove that this is optimal up to a constant factor.

Descriptors: Computational complexity; Algorithms; Theorem proving; Random processes

Identifiers: Layered graph traversal algorithms; Competitive analysis

Subj Catg: C 921.4, Combinatorial Mathematics (Includes Graph Theory, Set Theory); C 721.1, Computer Theory (Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory); C 922.1, Probability Theory

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0000258143 IP Accession No: 0129773

Trading space for time in undirected s-t connectivity

Broder, Andrei Z; Karlin, Anna R; Raghavan, Prabhakar; Upfal, Eli DEC Systems Research Center, Palo Alto, CA, USA

SIAM J COMPUT , v 23 , n 2 , p 324-334 , 1994

Publication Date: 1994

Publisher: SOCIETY FOR INDUSTRIAL AND APPLIED MATHEMATICS , 3600 University City

Science Center , Philadelphia , PA , 19104-2688

Country Of Publication: USA

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Document Type: Journal Article

Record Type: Abstract

Language: English

ISSN: 0097-5397

File Segment: Computer & Information Systems Abstracts

Abstract:

Aleliunas et al. (20th Annual Symposium on Foundations of Computer Science, IEEE Computer Society Press, Los Alamitos, CA, 1979, pp. 218-223) posed the following question: 'The reachability problem for undirected graphs can be solved in log space and $O(mn)$ time m is the number of edges and n is the number of vertices by a probabilistic algorithm that simulates a random walk, or in linear time and space by a conventional deterministic graph traversal algorithm. Is there a spectrum of time-space trade-offs between these extremes?' This question is answered in the affirmative for sparse graphs by presentation of an algorithm that is faster than the random walk by a factor essentially proportional to the size of its workspace. For denser graphs, this algorithm is faster than the random walk but the speed-up factor is smaller.

Descriptors: Computational complexity; Combinatorial mathematics

Identifiers: Space time trade off; Connectivity testing; Parallel random walks

Subj Catg: C 723.1, Computer Programming; C 921.4, Combinatorial Mathematics (Includes Graph Theory, Set Theory)

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0000242501 IP Accession No: 0070159

Transitive closure algorithms based on graph traversal.

Ioannidis, Yannis; Ramakrishnan, Raghu; Winger, Linda Univ of Wisconsin, WI, USA

ACM Transactions on Database Systems , v 18 , n 3 , p 512-576 , 1993

Publication Date: 1993

Publisher: Association for Computing Machinery, Inc. , One Astor Plaza, 1515 Broadway , New York , NY , 10036-5701

Country Of Publication: USA

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Document Type: Journal Article

Record Type: Abstract

Language: English

ISSN: 0362-5915

File Segment: Computer & Information Systems Abstracts

Abstract:

Several graph-based algorithms have been proposed in the literature to compute the transitive closure of a directed graph. We develop two new algorithms (Basic TC and Global DFTC) and compare the performance of their implementations in a disk-based environment with a well-known graph-based algorithm proposed by Schmitz. Our algorithms use depth-first search to traverse a graph and a technique called marking to avoid processing some of the arcs in the graph. They compute the closure by processing nodes in reverse topological order, building descendent sets by adding the descendent sets of children. While the details of these algorithms differ considerably, one important difference among them is the time at which descendent set additions are performed. Basic TC performs a separate depth-first traversal to obtain the topological order of nodes and does additions in a second pass. Global DFTC performs additions whenever two sets that must be added are in memory, thereby eliminating the need to bring these sets in again later. The Schmitz algorithm is intermediate in this respect, deferring the addition of the descendent set of a child to that of a parent until the root of the strong component containing the parent is identified. Contrary to our expectations, deferring additions as much as possible, as in Basic TC, results in superior performance. The first reason is that early additions result in larger descendent set sizes on the average over the duration of the execution, thereby causing more I/O; very often this turns out to more than offset the gains of not having to fetch certain sets again to add them. The second reason is that information collected in the first pass can be used to apply several optimizations in the second pass. To the extent possible, we also adapt these algorithms to perform path computations. Again, our performance comparison confirms the trends seen in reachability queries. Taken in conjunction with another performance study our results indicate that all graph-based algorithms significantly outperform other types of algorithms such as Seminaive and Warren.

Descriptors: Graph theory; Computational methods; Computer programming languages; Trees (mathematics); Data structures; Algorithms; Recursive functions; Critical path analysis; Query languages; Root loci

Identifiers: Transitive closure algorithms; Graph traversal; Schmitz algorithms

Subj Catg: C 723.3, Database Systems; C 921.4, Combinatorial Mathematics (Includes Graph Theory, Set Theory); C 723.1.1, Computer Programming Languages; C 723.2, Data Processing; C 723.1, Computer Programming; C 731.4, System Stability

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Performance modeling of a partitionable circular bus network for distributed systems.

Woo, Tai-Kuo Univ of Florida, Gainesville, FL, USA

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Publication Date: 1992

Publisher: ACM, NEW YORK, NY (USA)

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Record Type: Abstract

Language: English

ISBN: 0-89791-502-x

File Segment: Computer & Information Systems Abstracts

Abstract:

In a distributed computing environment, a high performance communication network is essential. In this paper, we present a dynamically partitionable circular bus network (PCBN) and an efficient algorithm for maximizing its utilization. In our approach, a distributed network is transformed into a graph, in which a vertex represents a communication request and an edge denotes the conflict between a pair of communication requests. A graph traversal algorithm is then applied to the graph to identify some maximal independent sets of vertices. The communication requests corresponding to the vertices of a maximal independent set can proceed in parallel. By computing the expected size of the maximal independent sets of a graph, we can obtain the improvement ratio of the network. The analytical performance evaluation shows a significant decrease in network delay.

Descriptors: Parallel processing systems; Computer systems; Computer networks; Performance; Algorithms; Graph theory; Combinatorial mathematics; Optimization; Computer hardware

Identifiers: Communication network; Partitionable circular bus network; Graph traversal algorithm

Subj Catg: C 722.4, Digital Computers and Systems; C 721.1, Computer Theory (Includes Formal Logic, Automata Theory, Switching Theory, Programming Theory); C 921.4, Combinatorial Mathematics (Includes Graph Theory, Set Theory); C 921.5, Optimization Techniques

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0000194227 IP Accession No: 2449147

Extensions to query languages for graph traversal problems.

Mannino, M V; Shapiro, L D Dep. Manage. Sci. and Inf. Syst., Univ. Texas, Austin, TX 78712, USA
IEEE Transactions on Knowledge and Data Engineering , v 2 , n 3 , p 353-363 , 1990

Publication Date: 1990

Publisher: Institute of Electrical and Electronics Engineers, Inc. , 445 Hoes Ln , Piscataway , NJ , 08854-1331

Country Of Publication: USA

Publisher Url: <http://ieee.org>

Publisher Email: inspec@ieee.org

Document Type: Journal Article

Record Type: Abstract

Language: English

ISSN: 1041-4347

File Segment: Computer & Information Systems Abstracts

Abstract:

We survey extensions to database query languages for retrievals that involve inferencing on the nodes and edges of a graph. Common types of inferencing are to find paths between two nodes, compute a value for a path such as a distance or an elapsed time, and to choose among alternative paths. Our

survey is based on the data model (relational or functional), method of extension (iteration, recursion, or special operators), interface style (string or tabular), and restrictions (data and problem oriented). The results of our survey indicate the diversity of language extensions and the need to provide data model and query language features to reason about such problems.

Descriptors: Data bases; Query languages

Identifiers: artificial intelligence; knowledge engineering; graph traversal

Subj Catg: C CS1.3.7, SPECIAL CLASSES OF LANGUAGES